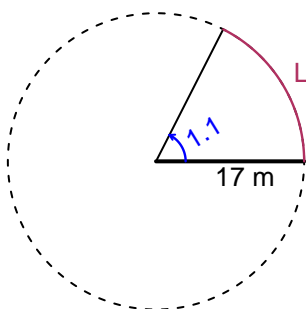# Trig Final (Practice v1)

- You can use a calculator (like Desmos)
- You should have a unit-circle with special angles and coordinates marked.

Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The angle measure is 1.1 radians. The radius is 17 meters. How long is the arc in meters?
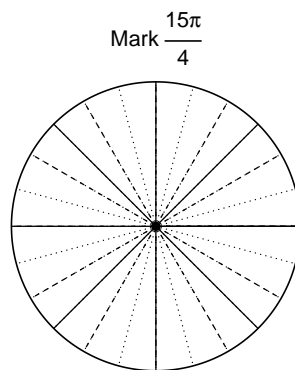

Question 2

Consider angles $\frac{-8\pi}{3}$ and $\frac{15\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{-8\pi}{3}\right)$ and $\sin\left(\frac{15\pi}{4}\right)$ by using a unit circle (provided separately).

Mark $\dfrac{-8\pi}{3}$

Find cos($-8\pi/3$)

Mark $\dfrac{15\pi}{4}$
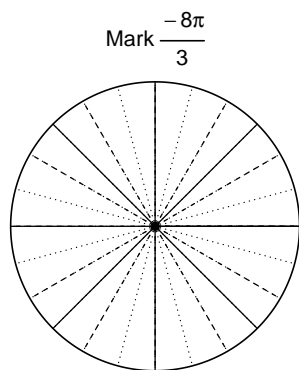
Find sin($15\pi/4$)

Question 3

If $\sin(\theta) = \frac{-77}{85}$, and θ is in quadrant IV, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with an amplitude of 2.26 meters, a midline at $y = -8.54$ meters, and a frequency of 5.51 Hz. At $t = 0$, the mass is at the maximum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).